

# Yokosuka Naval Base Prepares for Nuclear Aircraft Carrier

Photo by Catherine Gill



By Mr. Glenn T. Arakaki

Charting new waters in preparing Yokosuka Naval Base infrastructure for arrival of the *USS George Washington* (carrier vessel nuclear [CVN] 73)—the United States Navy's only nuclear aircraft carrier forward-deployed outside the United States—the United States Army Corps of Engineers (USACE) (Japan Engineer District), Naval Facilities Engineering Command (NAVFAC) Far East, and Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS & IMF) successfully executed a multimillion-dollar military construction (MILCON) program and related projects on a very tight and demanding schedule.

## Bilateral Effort

To make Yokosuka Naval Base (about 60 miles south of Tokyo) ready for the aircraft carrier, the U.S. team undertook extensive MILCON facility and utility upgrades, and the government of Japan—under the host nation-funded construction (HNFC) program managed on the U.S. side by USACE—dredged more than 700,000 cubic meters of material from Truman Bay. A multiyear bilateral effort by the United States and the government of Japan assured that all technical, political, and environmental concerns were addressed in the planning, engineering, and construction.

The *USS George Washington* contributes to peace and stability in the Pacific and provides the United States 7th Fleet with greater range and strike capability. All systems were go when the aircraft carrier arrived at Berth 12 on 25 September 2008, replacing

the *USS Kitty Hawk* (CV63)—the Navy's last conventionally powered aircraft carrier, which had departed Yokosuka on 28 May 2008, slated for decommissioning. Close cooperation between Japanese and American representatives at many levels overcame a variety of challenges during the forward deployment of the *USS George Washington*.

## Planning and Preparation

Foremost and impacting all aspects of the program was the finite date established for the *USS George Washington*'s arrival. The date, driven by the passing of the *USS Kitty Hawk*'s 15-year service life extension after a 1987–1991 overhaul, put the project start on a tight schedule.



Projects supporting *USS George Washington* were built on a limited-size area of Yokosuka Naval Base.

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Coming on the heels of international agreement between the United States and Japan, the construction necessary to replace the *USS Kitty Hawk* could not slip.

The security classification for the arrival of the *USS George Washington* was problematic for the design process for the project designated P-998. The USACE Honolulu Engineer District selected the architect-engineering firm Parsons Corporation for its technical expertise and requisite workforce security clearances. Although cleared U.S. employees conducted design reviews, Japanese Master Labor Contract engineers working for the United States Navy and Japan Engineer District in Yokosuka, who were most familiar with existing utilities and infrastructure, were not able to review the Parsons P-998 plans until late in the design. This made it difficult to verify for interface checks or coordinate with ongoing major construction work at Berth 12 under a separate host nation project designed years earlier in support of the *USS Kitty Hawk*.

However, weekly in-progress reviews (IPRs) by a team of USACE, NAVFAC, and Naval Sea Systems Command (NAVSEA) engineers ensured that recently completed HN construction as-built conditions were integrated into the P-998 design. Project managers from each organization brought the right expertise—USACE on government of Japan host nation and MILCON design and construction, NAVFAC on naval base/berth/power construction, and NAVSEA on nuclear-powered ship requirements.

Imperative to success throughout the make-ready program was commander support that gave the effort priority. All commanders ensured that project delivery teams (PDTs) were resourced with personnel having the right skill sets and were empowered to get results.

### Rapport and Coordination

The P-998 PDT, composed of representatives from the United States Army and Navy, the United States Forces Japan (USFJ), and the government of Japan, formed an interservice, international team. This created some unique relationships in the military engineering community. Although the Navy's capability as MILCON agent worldwide is renowned, USACE (in its role as the Department of Defense-designated construction agent for Japan) brought on NAVFAC Far East as a Japan Engineer District "customer" for P-998, while at the same time NAVFAC Far East executed other projects of its own related to the stationing of the carrier. PSNS &



Photo by Daniel Fujimoto

**Personnel from NAVFAC Far East and Japan Engineer District Yokosuka Resident Office test temporary electrical panels during a joint safety inspection.**

IMF, the subject matter expert for nuclear aircraft carrier support, provided a tremendous amount of specialized technical input during design and construction phases. This required intensive coordination by Japan Engineer District team members to determine if the technical input was within the scope of the project award and would require changes or other contractual actions.

These relationships called for the establishment of rapport between Army and Navy counterparts throughout all levels of the PDT. To achieve this, a senior engineer review group (SERG) consisting of senior leaders from Japan Engineer District, NAVFAC Far East, NAVSEA, Public Works Department (PWD), Commander Fleet Activities Yokosuka (CFAY), Ship Repair Facility (SRF), and PSNS & IMF met monthly to provide effective guidance and help facilitate resolution of critical issues.

### Contracting and Funding

The Japan Engineer District executed three P-998 MILCON contracts with a program amount of \$67 million.

**Wharf Upgrades.** The approximately \$36 million wharf upgrades project provided one-of-a-kind systems never before constructed overseas for the operation and maintenance of nuclear aircraft carriers. The project retrofitted Yokosuka's Berth 12 utilities to include shore power, freeze seal air, and high-pressure air systems. Parsons completed the design for a facility used to produce grade A water through filtering, reverse osmosis, degasification, and demineralization processes. PSNS & IMF procured and installed the system downstream of the storage tanks to the distribution to the carrier, while the Japan Engineer District construction contractor Tokyu Construction Company, Ltd., was responsible for the remainder of



the looped system. The facility was constructed on Berth 12 after the demolition of 18,000 cubic meters of mountainside. Detailed coordination with PSNS & IMF was necessary throughout the planning, design, and construction. Due to the unique technology and site conditions, more than 60 contract changes were made for the wharf upgrade.

The project also retrofitted Berth 13 to provide “hotel” utilities by providing a potable water supply line, a wastewater forced main, and electrical distribution. Site conditions complicated the project; however, planners worked out an acceptable construction modification to meet the needs of the customer.

Berth 10/11, for the nuclear aircraft carrier maintenance barge, was constructed along an existing seawall near Berth 12. The Japan Engineer District worked with government of Japan and United States Navy entities to determine ownership and proper custody and disposal of a preexisting pontoon and executed its safe removal for nominal cost, ensuring that construction could begin in time to meet the tight schedule. Berth 10/11 is unique to the Navy for maintenance barge berthing.

The P-998 wharf upgrades, started 30 May 2006, was the largest MILCON executed by USACE for the United States Navy in Japan and the first such MILCON for Japan’s second largest construction contractor, Tokyu. The construction contract was completed 6 June 2008.

**Power Upgrades.** This contract built a new switchgear facility for the Yokosuka Naval Base to expand the existing 60-hertz power grid. The \$22 million design-build project was awarded February 2007 to Japan’s largest construction contractor, Obayashi Corporation. The Japan Engineer District and the Honolulu District Regional Technical

Center worked collaboratively to see the project to a 7 August 2008 contract completion. Not all challenges were technical, however. Some equipment, such as the 4.5 megavolt-ampere (MVA) frequency converter and 15 MVA synchronous condenser, were of American manufacture, causing complications for the Japanese contractor in controlling major equipment deliveries, due to export requirements.

The project installed digital supervisory controls and data acquisition (SCADA) equipment for collecting and displaying real-time operational data to the power system operators. The SCADA system encompasses a central control station, a high-bandwidth fiber distribution network and 60 intelligent remote devices that provide system parameters every two seconds, process data, and respond immediately to control signals. The new SCADA system occupies less than 10 percent of the space of the base’s existing system and provides the memory capacity and expansion capability to replace it.

Power to the switchgear is provided by the existing switchgear facility at Yokosuka Naval Base and by an adjacent plant that contains three 5,820-kilowatt gas engines and a 7,200-kilowatt gas turbine for 60-hertz electrical power and steam service to shore and ship areas. Limited confines created a constantly conflicting workspace environment and necessitated daily coordination between the two projects.

**Building Addition.** The Japan Engineer District awarded the contract for the Building 3128 second floor addition in May 2006 to a third contractor, Ichibo Corporation, a relatively small but experienced firm that has completed U.S.-funded work across Japan. The new second floor, a \$2.5 million project, houses the Commander, Submarine Group Seven (COMSUBGRU-7), command structure and was the first project finished, with construction completed in June 2007.

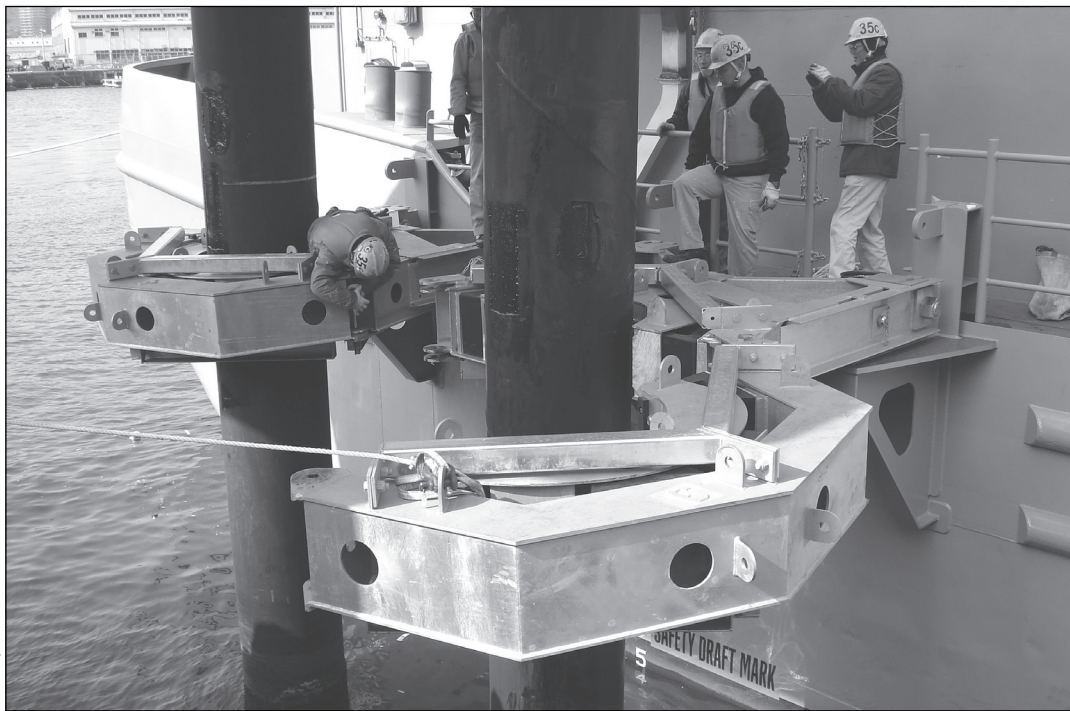
#### **Dredging Truman Bay**

In addition to MILCON, the Japan Engineer District also provided construction management services consisting of engineering and construction surveillance for the host nation Facilities Improvement Program (FIP) project NA-027, Dredging of Truman Bay. The project included the dredging of Berths 8/9 and 12 and the adjacent turning basin to a depth of 15.24 meters to support movements of the *USS George Washington*. Work also included the removal and reinstallation of several buoys and their concrete moorings.



Photo by Yoshio Noji

**Medium-voltage cabling is supported by new cable trays in a Yokosuka Naval Base utility tunnel.**



**Yokosuka Naval Base Ship Repair Facility personnel connect maintenance barge spud mooring collars to piles at the new seawall.**

Planners ensured that the contractor under a government of Japan contract acquired a dredge permit from the Yokosuka Port Authority and erected silt screen fences required by the city of Yokosuka. The Ministry of Environment issued a dumping permit; however, daily quantity was limited for disposal within a joint U.S. military and Japan Self-Defense Forces training area approximately 150 kilometers to the south. Additionally, the Ministry of Defense and South Kanto Defense Bureau (SKDB) worked for months to reach agreement with protestors and the Chiba fishermen's association over the project.


Although the dredge plan appeared simple, execution was complicated by ship movements, Japan Engineer District and Navy contractor activities, and bad weather. Japan Engineer District held weekly coordination meetings to resolve complex scheduling issues and to enact solutions that included night dredging, doubling the dredge fleet, increasing the number of transport ships, and coordinating the continuous reestablishment of silt screen fence boundaries. The Commander, United States Naval Forces, Japan, worked closely with the director of the SKDB to ensure that the project stayed on schedule. In dredging from 10 August 2007 through 3 August 2008, the project relocated more than 700,000 cubic meters of material.

### **Safety First**

**T**he projects achieved outstanding safety records—282,914 contact man-hours for the wharf upgrade and 114,660 contact man-hours for the power upgrade—with no recordable lost-time accidents. Japan Engineer District conducted safety oversight and established mentoring/capacity development relationships with the contractors. Japan Engineer District and NAVFAC funded Japanese translation of Engineer Manual (EM) 385-1-1, *Safety and Health Requirements*, to ensure that Japanese

contractors had a clear understanding. Despite the challenges presented by language and cultural differences, industry practices, and variance in U.S. and Japanese safety regulations, the following helped ensure accident prevention and awareness:

- Effective use of composite risk management principles
- Preparatory safety meetings
- Management staff safety surveillance
- Routine joint safety inspections
- Daily contractor safety tool box meetings
- Proactive quality assurance representatives and contractor safety and occupational health officers
- The mindset that “Everyone is a Safety Officer”

The final result in this complex, multicontract project was on-time and within-budget delivery of shore-to-ship support systems for the *USS George Washington*. 

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**Note:** On 10 July 2009, USACE announced that the Japan District PDT for the Navy MILCON Project P-998 Wharf Upgrade, Power Upgrade, Building 3128 Addition, and the Host Nation Project Dredge Truman Bay won the 2009 USACE PDT of the Year Honors Award. USACE commended the PDT for “completing the project and associated facilities well below the USACE metrics for cost and time growth. The PDT coordinated a highly complex program with several U.S. Navy organizations, the U.S. Forces Japan and, most important, with the Host Nation of Japan.”